Journal of Economics and Sustainable Development
ISSN 2222-1700 (Paper) ISSN 2222-2855 (Online)
Vol.2, No.7, 2011

Econometric Analysis of the Impact of Entrepreneurship on Economic Growth-Case of the Kenyan Economy

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Received: October 25, 2011
Accepted: October 29, 2011
Published: November 4, 2011

Abstract
The neoclassical production function growth model linked labour and capital to output. The model was later expanded to include a measure of research and development. The objective of this research was to introduce and establish the impact of entrepreneurship on economic growth using this model. Secondary data was used for the two World Bank group entrepreneurship survey measures adopted this study, the total number of businesses as at year-end and those newly started in the current year. The results indicated a statistically significant relationship between entrepreneurship and economic growth. R-squared was 0.8974 and the coefficients for the adopted measures of entrepreneurship were all positive and statistically significant. The implication was that countries that promoted entrepreneurship experienced increases in economic growth and confirmed the need for promotion of entrepreneurship education, training of entrepreneurs, facilitating access to finance, better public management, research and innovations, improving support services and employment conditions for entrepreneurs.

Keywords: Entrepreneurship, Economic Growth, Entrepreneurial ability

Introduction

The impact of entrepreneurship on economic growth remains a relatively under-researched phenomenon. Lingelbach *et al.* (2005, p. 1) pointed out that entrepreneurship in developing countries is arguably the least studied significant economic and social phenomenon. According to Shane (2003), in his review of 472 entrepreneurship papers published in 19 different international journals, 'the 13 most frequently published authors resided in developed countries and their work dealt with the link between entrepreneurship and economic growth in developed economies'. In another extensive survey of the mainstream entrepreneurship literature, Praag and Versloot (2007, p.3) confined their survey to the literature dealing with advanced economies stating that the contribution of entrepreneurs to economic growth is likely to differ across countries in the developing world.

There is a great strand of literature which interpreted the sum of entry and exit in industries or regions as indicating entrepreneurial activity and linked entrepreneurship to economic growth using entry-exit levels (Bosma & Nieuwenhuijsen 2000; Reynolds 1999; Caves 1998, p. 1973; Acs & Armington 2002; Audretsch & Fritsch 2002; Audretsch *et al.* 2002). The frequent unit of observation was at the spatial level; a city, a region or a state. Regions that had relatively larger shares of small firms when compared to other regions were considered to have had higher entrepreneurial activity and consequently experienced higher economic growth. The impact of the number of market participants in an industry on economic growth was another consideration where an increase in the number of competitors was usually related to more intensive entrepreneurial activity and subsequently higher economic growth (Glaeser *et al.* 1992; Nickell 1996;

Nicolitsas & Dryden 1997; Lever & Nieuwenhuijsen 1999; Geroski 1989). Characteristic of the centralized planned economies was the almost complete absence of small firms (and private ownership of the means of production) and this absence was given as one of the major factors that lead to the collapse of state socialism (Acs & Audretsch 1987; Prusa & Schmitz 1991 and Rothwell 1983, 1984).

Analysis of existing studies linking entrepreneurship to economic growth revealed that they were restricted to two units of observations – at the level of the establishment or enterprise and for regions but not country (Caree & Thurik, 2002; Audretsch 1995;Caves 1998). It also emerged from the studies that the growth of new firms and small firms was systematically greater than for large and established incumbents. Nevertheless, the convincing stylized facts showed that entrepreneurship was positively and significantly related to economic growth. However, these studies were restricted to western countries and not much was done to examine the impact of entrepreneurship on economic growth for developing countries. The purpose of this study was to fill this gap in research by analyzing the impact of entrepreneurial activity on macroeconomic growth for Kenya in the neoclassical production function model.

This paper is organized as follows. Section 2 presents a review of the literature linking entrepreneurship to economic growth and the conceptual framework. The methodology is described in section 3. In section 4 the results are presented and finally conclusions and recommendations are made in section 5.

1.2 Objectives of the study

i. to estimate and test the impact of entrepreneurship on economic growth for the Kenyan economy using econometric modelling.
ii. to estimate and confirm whether capital and labour; the conventional determinants of economic growth, were significant for the Kenya Economy.

1.3 Statement of Hypotheses

i. There is a significant positive relationship between gross domestic product and entrepreneurship.
ii. There is a significant positive relationship between gross domestic product and capital.
iii. There is a significant positive relationship between gross domestic product and labour

1.0 Review of Theoretical Literature

Audretsch *et al.* (2006, p. 25), McMillan & Woodruff (2002, p.166), Lingelbach *et al.* (2005) and Johnson *et al.* (2000) argued that economic growth and transformation was not being principally driven through existing firms, but through the creation of new firms which were the ones which most probably grew and created new jobs. McMillan & Woodruff (2002, p.153) concurred and stated that new firms often strengthened reforms by improving economic conditions and were 'less burdened with the significant influences of such a society' contrary to existing firms that were undergoing reform. Estrin *et al.* (2006, p.693) brought in the dimension of take-over and argued that start-ups also took the form of successful privatization of inefficient state-owned firms.

According to Wennekers & Thurik (1999, p.50), when many entrepreneurial firms were started in a region, a process of competition between these various ideas and initiatives took place continuously and this lead to the survival of the most viable firms and industries. Whenever there was variety, competition, selection and also imitation, the productive potential of a regional or national economy was expanded and transformed by replacement or displacement of obsolete firms by higher productivity and by expansion of new niche and industries. Resources could then be reallocated into more productive areas which meant an increase in competitive advantage and economic growth. Their general conclusion was that the larger the share of innovative entrepreneurs in the workforce, the more elevated the rhythm of economic growth.

Schumpeter (1934) agreed with Caree & Thurik (2002) and further stated that there was a shift in the

industry structure away from large firms towards an increased role for small firms because of technological change, globalization, deregulation, shifts in the labor supply, variety in demand and the resulting higher levels of uncertainty among other factors and that further economic growth was shaped by the degree to which the industry structure utilized scarce resources most efficiently. He described innovative activity as "the carrying out of new combinations", by distinguishing five cases that were summarized by Dejardin (2000) namely: launch of a new good, introduction of a new method of production, opening of a new market, conquest of a new source of supply of raw materials or half manufactured goods and carrying out of the new organization of any industry. The Schumpeterian entrepreneur sought to create new profit opportunities through innovation which resulted from productivity increases and thereby positively affected economic growth. Moreover, the disequilibrium created by the entrepreneur was favourable for additional innovations and profit opportunities. The explanation for this was that the entrepreneur was responsible for generating inventions which rendered existing technologies and products obsolete. This process of creative destruction was the main feature of what was called the Schumpeter Mark I regime. On the other hand, the Schumpeter Mark 2 regime was mainly characterized by creative accumulation by large and established firms in capitalism, socialism and democracy. The Mark 1 regime was most likely characterized by many small firms whereas the Mark 2 was likely to be characterized by a concentrated market structure.

2.1 Review of Empirical Literature

Bosma & Nieuwenhuijsen (2000) used data for 40 Dutch regions for the 1988-96 periods to study the impact of entry-exit on economic growth and found that entry-exit had a significant positive effect on total factor productivity growth in the service sector but not so in the manufacturing sector. Similarly, Reynolds (1999) examined the impact of entry-exit on economic growth using American regional data for the 1980-92 periods and confirmed that entry-exit was a significant determinant of economic growth. Caves (1998, p. 1973) found similar results in his study and also concluded that entry and exits made an important contribution to economic growth but with a bigger impact in the long run than in the short run. Similarly, Acs & Armington (2002) also used the American regional data in their study to link entrepreneurship to economic growth at the regional level using new firm birth rate as a direct measure of entrepreneurial activity in each of these local economies and found that higher levels of entrepreneurial activity were significantly and positively linked to higher economic growth rates.

However, Audretsch & Fritsch (1996) found contrasting results for Germany during the 1980s. In their findings for the manufacturing and the service sectors, a high rate of entry-exit in a region tended to lead to a lower and not a higher rate of economic growth for Germany. The explanation they gave for this contrast in results between Germany and the U.S.A was that regional growth came from SMEs only when they served as agents of change through innovative activity. However, Audretsch & Fritsch (2002) found in their repeat study for the 1990s that those regions with a higher start-up rates exhibited higher economic growth rates. The possible explanation being that the engine of growth had then shifted towards entrepreneurship for Germany. Audretsch *et al*. (2002) reviewed studies linking entrepreneurship to economic growth for the five large economies (France, Germany, Japan, U.K., U.S.A) and found that the manufacturing industry that underwent only little downsizing in the 1977-90 period experienced relatively less subsequent growth for these countries.

Callejon & Segarra (1999) went further and linked new-firm birth rates and death rates (turbulence) to total factor productivity growth in industries and regions using a data set of Spanish manufacturing industries between 1980-1992. They found the same results as Bosma & Nieuwenhuijsen (2000), Reynolds (1999), Acs & Armington (2002), Audretsch & Fritsch (2002) and similarly concluded that both new-firm start-up rates and exit rates contributed significantly and positively to the growth of total factor productivity in regions and industries.

Carree & Thurik (1998, 1999a) examined the impact of the share of small firms in manufacturing industries in European countries in 1990 and found that they had a positive and significant effect on the industrial output growth. Further, their findings indicated that excess growth of small firms had a positive influence

on percentage change in gross national product for a sample of 16 European countries from 1988 to 1993. Likewise, Robbins *et al.* (2000) performed an analysis of 48 of the 50 United States of America for the 1986-95 periods and found that states that had a higher proportion of (very) small business employment experienced higher level of productivity growth and gross state product growth.

Nickell (1996), Nicolitsas & Dryden (1997), Lever & Nieuwenhuijsen (1999) and Geroski's (1989) presented evidence that competition, as measured by increased number of competitors had a significant and positive effect on the rate of total factor productivity growth. Glaeser *et al.* (1992) investigated the determinants of regional sectoral growth; specialization, diversity and competition and found similar results that lead them to conclude that local competition (relative number of businesses per worker) was a significant determinant of employment growth in industries.

Foelster (2000) distinguished his study from the studies reviewed above for the reason that he used a Layard-Nickell framework to investigate the link between micro behaviour and macroeconomic performance for Sweden from 1976-1995. Expectedly, he found that increases in self-employment rates had a significant and positive impact on regional employment rates. Hart and Hanvey (1995) examined the sources of employment creation and losses for the United Kingdom and found that this too came largely from SMEs. However, Blanchflower (2000, p. 497) found no evidence for a panel of OECD countries to indicate that increases in the self-employment rates were a significant determinant of economic growth.

Wong *et al.* (2005) defined the augmented Cobb-Douglas model in equation 2.1 below to examine the impact of innovation on economic growth for 37 countries participating in the Gem data set:

Rate of		Base year		Growth	New Firm	Technological	
Econ Growth = β_0+	β_1	GDP per	+ β2	in Capital per	+ β_3 Creation +	β_4 Intensity	(2.1)
		Worker		Worker		Innovation	

They used ordinary least squares in their estimation and found that innovation was positively related to GDP growth. However, they did not find support for their second hypothesis that a higher level of overall Total Entrepreneurship Activity was related to higher economic growth rates. Similarly, the estimated coefficients on other measures in their model, opportunity and necessity TEA were found to be insignificant although the signs of the coefficients were in the expected direction. The distinctive result from their study was that of the four types of new business creation activities, only high potential entrepreneurship was found to have a significant impact on economic growth. In addition, they conducted an analysis to determine if the effect of new business creation on economic development was moderated by the income level of nations and found the income effect as insignificant in their model.

Using the same GEM dataset but a different model specification, Van Stel *et al.* (2004) specified the model in equation 2.2 below to analyze the impact of changes in capital, labour, R&D activities and entrepreneurship on economic growth for German regions between 1990 and 2002 and found that growth differed for counties in different stages of economic development.

$$\ln Y_{it} - \ln Y_{i1990} = \eta_1(\ln K_{it} - \ln K_{i1990}) + \eta_2(\ln L_{it} - \ln L_{i1990}) + \eta_3(\ln KNOW_{it} - \ln KNOW_{i1990}) \quad \ldots\ldots\ldots\ldots\ldots\ldots (2.2)$$

The results indicated that an increase in the region's knowledge stock generated by R & D carried out in private business was a fundamental determinant of economic growth because regions which increased their knowledge stock through R & D activities in private and public industries compared to their initial conditions in 1990 and which increased their new firm formation activity compared to 1990, realized stronger economic growth rate. Like Wong *et al.* (2005), Van Stel *et al.* (2004) found that innovative start-up activity had a bigger impact on economic growth than an increase in general start-up activity. Distinctively, they found Pavitt (2001) that knowledge generated by private businesses had a much higher impact than knowledge from public organizations, possibly because this public knowledge hardly resulted

in ready-to-produce innovations and was rarely translated into new products or services in the short run

Audstretch & Keilbach (2002) hypothesized that regions with greater degree of entrepreneurship capital exhibited higher output for German regions, *ceteris paribus*. They specified the following intrinsically linear model to link entrepreneurship to economic growth.

$Y_i = \alpha K_i^{\beta 1} L_i^{\beta 2} R_i^{\beta 3} E_i^{\beta 4} e^{\varepsilon}$ ..... (2.3)

Where
K-is physical labour,
L- is Labour,
R- is knowledge capital,
and E is entrepreneurship.

The subscript (i) referred to the region. They measured entrepreneurship using business start-ups from 1989-1992, a ten year period to take care of stochastic disturbances but computed two modified measures of entrepreneurship, one restricted entrepreneurship capital to include only start-up activity in high-technology manufacturing industries (whose R&D-intensity is above 2.5%) while the second restricted entrepreneurship capital to start-ups in ICT industries, firms in the hard and software business and convincingly captured the argument by some scholars that entrepreneurship should only refer to start-ups involving innovative activity.

Their findings confirmed that physical capital, labour, knowledge, High-Tech and ICT entrepreneurship were significant determinants of output for German regions. Audstretch & Keilbach (2002) further regressed output on only one of each of these two alternative measures of entrepreneurship capital and confirmed their initial finding and findings by other scholars that entrepreneurship was indeed a major determinant of economic growth.

Henderson (2006) analyzed the relationship between entrepreneurship and economic growth for the period 1980 to 1990 by regressing employment level for U.S.A counties on various characteristics of a county that were believed to influence economic growth as shown in equation 2.4 below:

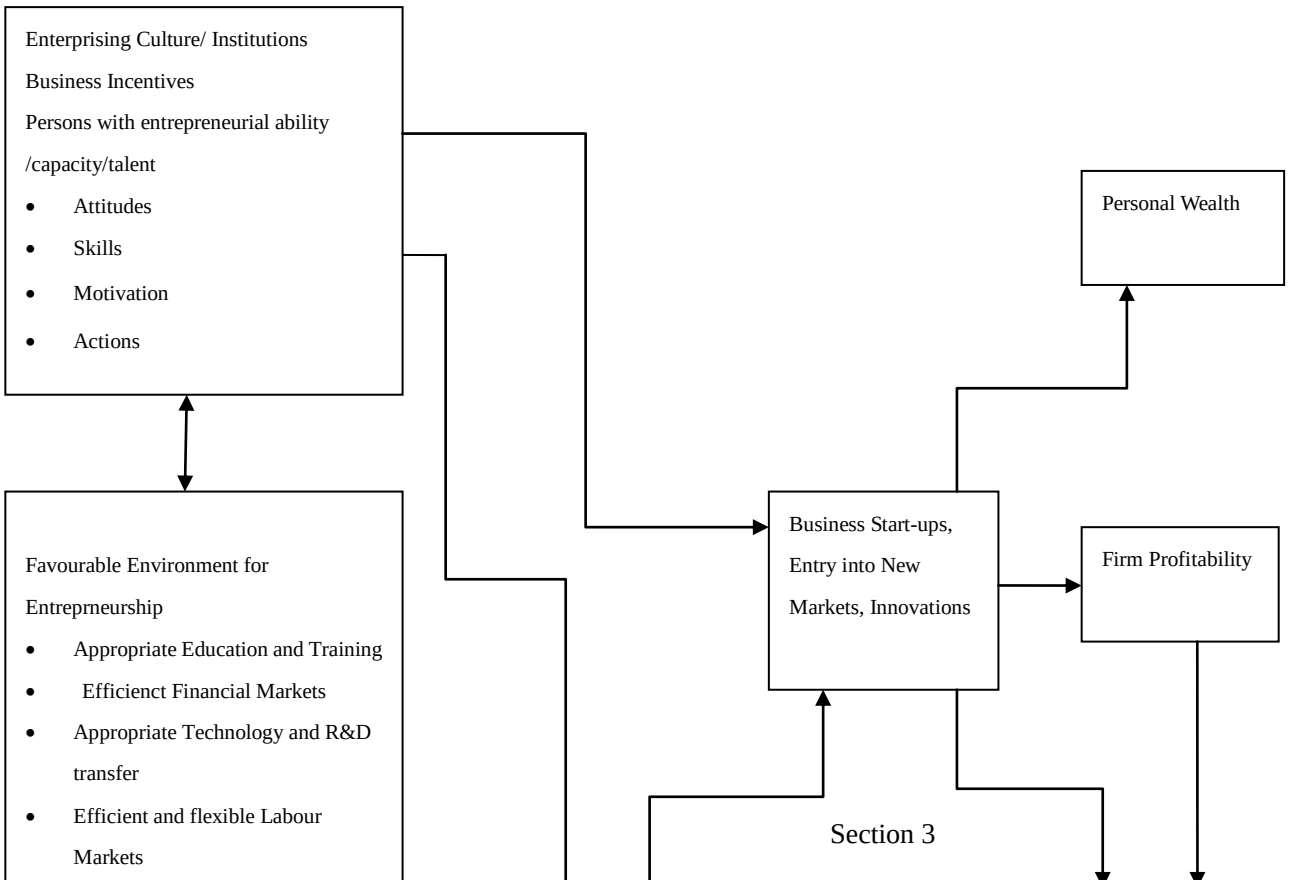
$EMP_{1991\text{-}2001} = f\ (E,\ L,\ I,\ U,\ T,\ A)$ ..... (2.4)

Where:
$EMP_{1991\text{-}2001}$ is the county's employment growth rate from 1991-2001:
E -is entrepreneurship
L-is labor
I- is infrastructure
U-is agglomeration,
T- is taxes and
A- is amenity characteristics in the county.

Henderson (2006) distinguished his study from others by disaggregating entrepreneurship into two major measures of entrepreneurship based on proprietor data levels as follows: the average share of non-farm employment in the county accounted for by non-farm proprietors, the average annual growth rate in entrepreneurs where three measures of entrepreneurship were used to test the hypothesis namely: the average number of per capita new business start-ups, the average number of per capita new business that survived five years, the average number of per capita new business start-ups that produced high growth during the first five years of operation.

The findings matched apriori expectations and showed that entrepreneurship activity was positively and significantly related to employment growth. The coefficient for the number of start-up firms per capita, the number of per capita start-ups that survived five years and the number of per capita start-up firms that produced high level of growth were all positive and significant. However, when all the three entrepreneurial measures were included in the regression only start-up firms that produced a high level of growth were found to positively and significantly affect employment growth. There was a very high correlation between the number of start-up firms per capita and the number of per capita start-ups that survived five years prompting Henderson (2006) to specify a model that included the number of start-up firms per capita and the number of per capita start-up firms that produced a high level of growth only. In his findings coefficients on former and later were both positive but only the later coefficient was significant at the 0.01 level leading to the same conclusion made by Audstretch & Keilbach (2002), Van Stel *et al.* (2004), Wong *et al.* (2005) that the ability to foster the creation of innovative and high growth business was a more important determinant of economic growth.

2.3 Conceptual Framework



The framework in figure 1 depicts the role of entrepreneurship in the creation and growth of firms. The favourable conditions required to tigger the entrepreneurial process are captured as "Favourable Environment for Entrepreneurship" in the first section of the conceptual framework. The existence of this favourable business environment will result in the emergence of entrepreneurial opportunities in the market as depicted in section 2. These opportunities will be exploited by individuals with the ability, capacity, motivation, pyschological endowments and skills to establish firms in pursuit of those opportunities (Murphy *et al.* 1991; Licht 2007; Gaglio & Katz 2001). In addition to the conducive business environment and macroeconomic conditions, their entrepreneurial actions are also influenced by cultural factors and institutional factors as captured in the upper part of the first section of the conceptual framework. Wennekers & Thurik (1999) argued that the history of the rise and fall of nations has shown that cultural vitality, thriving sciences and high tide in entrepreneurship often coincided. Further, the institutional framework both on the national level and within firms importantly defined the incentives for individuals to turn their ambitions into actions and determined to what extent unnecessary barriers would hamper them.

Entrepreneurs realize their entrepreneurial qualities and ambitions by establishing business start-ups, coming up with innovations or entering new markets. This is shown in the third section of the conceptual framework. Caree & Thurik (2002) found that the activities of the total number of individuals with entrepreneurial ability that decided to start their own firms, directly affected economic growth and development. The impact of these entrepreneurial activities is depicted in the fourth section as improved personal wealth at the individual level, high profitability at the firm level and creation of jobs, high rates of competitiveness and economic growth at the macro level. There is often competition of new ideas and initiatives which leads to variety in the market and survival and imitation of the most viable firms on one hand and a displacement of obsolete firms on the other. At the macro level, this leads to expansion and transformation of the productive potential of the national economy by inducing higher productivity and an expansion of new niches and industries (Caree & Thurik 2002, pp. 19–20).

2.0 Research Methodology

3.2 Specification of the Econometric Model

The model adopted was used by Audstretch *et al.* (2002) and Henderson (2006) for the German and Brazilian regions respectively. In the model gross domestic product was postulated to be a function capital, labour, knowledge capital and entrepreneurship. A similar model was used by Wennekers *et al.* (2005) to regress GDP as measured by per capita income on nascent entrepreneurship. Wong *et al.* (2005) used a similar model to analyze the impact of entrepreneurial activity on economic growth for 37 countries participating in the GEM 2002. It was later adopted by Aloysius (2002) for Cameroun and in other AERC funded papers examining the African economic growth performance.

This model was adopted because the structure of the Kenyan, other African countries and the Brazilian economies are the same with agriculture contributing significantly to their gross domestic product.

This was one of the pioneer econometric analyses of the impact of entrepreneurship on economic growth in Kenya. There was in fact a deficiency of empirical studies linking entrepreneurship to economic growth for the Kenyan Economy. The model was first presented in non-linear form and then linearized by expressing in the log-linear form.

$$GDP = \alpha K^{\beta 1} L^{\beta 2} Enter^{\beta 4} e^{\varepsilon} \quad (3.1)$$

Where:

GDP- is gross domestic product

K - is the factor of capital

L- is labour
Enter- is a measure of entrepreneurship.
$\alpha, \beta 1, \beta 2,$ and $\beta 3$ are the coefficients

In log– linear form the model is presented as follows:

$$\text{Ln GDP} = \text{Ln } \alpha + \beta_1 \text{Ln K} + \beta_2 \text{Ln L} + \beta_3 \text{Ln Enter} + \varepsilon \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (3.2)$$

The model was expressed in log-linear form for estimation by ordinary least squares method (OLS).

3.3 Type and Sources of Data

This study used secondary data. Data was collected from the Kenyan Business Registry available at the Attorney General's Office, World Tables by the World Bank, various issues of the Central Bank of Kenya, The IMF's International statistics, World Bank Development Indicators, the Kenyan Economic Surveys and Statistical Abstracts. The data collected was annual in nature and spanned over a 40 year period from 1968-2008.

3.4 Analysis of Data

Analysis of data was done by micro fit and SPSS statistical applications. The data was tested for stationarity. The variables included in the model were tested for co-integration.

The linearized equations were estimated using ordinary least squares. Standard statistics were used to test the goodness of fit of the estimating equation. The t-statistic was used to evaluate the significance of individual regressors while the R^2 was used to measure the percentage of the total variation in the dependent variable explained by the independent variables.

The Dr. Durbin Watson statistic was used to test the data for autocorrelation. The t-statistic was used to test for specification bias. Since multicollinearity is a sample size problem, the sample data used was large to avoid multicollinearity and heteroscedasticity.

3.0 Presentation and Interpretation of Results

4.1 Correlation Analysis

There was a positive and very high correlation between gross domestic product and entrepreneurship meaning that they moved in the same direction together. The values of between 0.8 and 1.0 shown in table 1 for the correlation coefficient indicated a strong positive linear relationship.

Real gross domestic product was positively and highly correlated to the total number of businesses at year-end, the total number of new businesses started in the current year, capital and labour as shown in table 1 and figure 1-4 below:

4.2 Stationarity Tests

The following tests were used to test the data for each variable included in the model for stationarity: Graphical analysis, Correlogram test and Unit Root test. All the plotted time series variables in the model showed an upward trend suggesting that they were probably non-stationary. The correlogram showed that Gross Domestic Product, Capital, Labour and Entrepreneurship measures were probably non-stationary reinforcing the graphical results starting at very high values and declined when more lags were considered.

The absolute value of the computed (τ) tau statistic for each of the models tested for stationarity was more than the 10% tabular one of -2.58 for all the variables confirming that the graphical and correlogram findings that the time series variables under consideration were not stationary. The coefficient of the lag; δ= 0 or better still ρ which is given by (1- δ). The measures for entrepreneurship and new were integrated of

order 1(I (1)) while Labour, Gross Domestic Product and Capital were integrated of order 2 (I (2))

4.3 Regressions Results

$\Delta \text{Ln RGDP}_t = 0.66 + 0.47\Delta \text{Ln Enter} + 0.23\Delta \text{Ln New} + 0.57\Delta \text{Ln Capital} + 0.13\Delta \text{Ln Labour} \ldots\ldots (4.1)$

S.E. =	(0.93)	(0.14)	(0.10)	(0.10)	(0.16)
t =	(0.71)	(3.39)	(2.53)	(6.14)	(3.81)

R-Squared= 0. 8974 Adjusted R-Squared = 0. 8856 d= 2.0579

The first hypothesis was accepted confirming that there was a significant positive relationship between real gross domestic product and entrepreneurship. The findings indicated that entrepreneurship was an important determinant of economic growth for the period under study. The coefficients for both measures of entrepreneurship, 'Enter' and 'New", the total number of businesses as at the end year and those new businesses started in the calendar respectively, were significant at 5% level with 35 degrees of freedom. The second and third hypotheses were also accepted. The measure for capital was significant at 2.5% level with 35 degrees of freedom while that for labour was also significant at 5% level with 35 degrees of freedom. The signs for the coefficients of capital, labour and entrepreneurship were all positive as expected indicative of a positive relationship between real gross domestic product and entrepreneurship, labour and capital.

R-squared was 0.8974 indicating that the variables included in the model collective explained 89.74% of all the determinants of real gross domestic product. Only 10.26% of the other determinants were captured by the error term.

The interpretation of the results was that a unit increase in 'Enter' would increase real gross domestic product by 0.47% while a unit increase in 'New', capital and labour would increase real gross domestic product by 0.23%, 0.57% and 0.13% respectively.

The Durbin Watson statistic (d) was 2.06 indicating the absence of autocorrelation. The absolute value of the computed F-statistic (26.16) was higher than the tabular one indicating that the data was neither multi-co linear nor heteroscedastic.

4.0 Conclusions and Recommendations

The implication of these findings was that countries that promoted entrepreneurship experienced increases in overall economic growth and expansion of the formal sector. Therefore the government and other stakeholders should put in place measures that create a good business environment that will encourage the creation and growth of new businesses since those businesses create jobs and are major agents of entrepreneurship. Some of the measures that the government and other stakeholders should take include:

Promotion of entrepreneurship education throughout the education system from primary school through to university and technical colleges, make sure that critical skills needed for success in business are taught in universities and other institutions of higher learning, emphasize more the role and benefit of entrepreneurship for example through supporting awards for successful and innovative entrepreneurs and through spirited media campaigns.

The government and other stakeholders should strengthen training for entrepreneurs by facilitating the development of entrepreneurship courses in the public and private sector that would equip entrepreneurs with requisite skills and knowledge to survive in the dynamic business environment and taking a leading role in the adoption of a training curricula that is best suited to SMEs and their employees in cooperation with the social partners. They should also provide incentives for those preparing to start a business to

undertake training including fiscal benefits, facilitate the linking-up of institutions specialized in entrepreneurial training to stimulate the exchange of best practices and ensure that SMEs are involved more closely in the implementation of these training programmes.
To make it easy for businesses to access more capital the government and other stakeholders should: establish or improve schemes to attract small amounts of capital into small enterprises to reduce dependence on bank loans, promote capital investment into expanding and hi-tech firms by private investors and through venture capital schemes, identify and spread good practices in financing start-ups, produce a guide for SMEs to help them to assess their suitability to seek access to the stock market, help start capital funds that invest in innovative smaller businesses with strong growth and employment potential.

The government and other stakeholders should; improve technology transfer and the dissemination of research results to SMEs and foster cooperation between businesses and research centers to create awareness among entrepreneurs. They should also make innovation support networks more professional and accessible besides setting-up a Patent's office that can help businesses to patent and protect their innovations.

The government and other stakeholders should introduce and monitor measures for flexible employment and working conditions in their national action plans, which serve the interests of both employers and employees. They should identify, collect and disseminate good labour practices in order to foster improvements at enterprise level because for enterprise to thrive a motivated and flexible labour force is needed.

Public authorities need to strive towards improving the quality of their service to business especially speeding up registration of businesses because slow and complex procedures hamper business start-ups. This should include; setting-up one-stop shops for business registration, putting forward easier procedures to make more businesses benefit and bid for public procurement contracts and reducing required registration details to a single registration form.

Forums should be created where businesses can exchange good practices. The government should improve its dialogue with the business community and make it easy for businesses to find answers on public procurement, access to finance among other issues pertinent to business, help to improve support services by facilitating exchange of information by creating a directory of web information services for small businesses and together with the business community identify weaknesses in existing support measures and help with improving performance.

The government and other stakeholders should put in place measures to stabilize the political and macro environment. These should include fiscal and monetary measures to stabilize the shilling, curb inflation and therefore reduce the cost of production and doing business. Measures should also be put in place to cushion businesses from losses arising from the uncertainty of an unstable political environment which includes implementing crucial laws that will facilitate an enabling environment for investors. Politicians have to come up with ways of conducting campaigns that won't affect economic growth each and every time elections are held because every election year the country's economy drastically declines to an imaginable level because of dirty politics.

REFERENCES

Acs Zoltan and David Audretsch (1987), "Innovation in Large and Small Firms: An empirical Analysis". *American Economic review*

Acs, Zoltan J. and Catherine Armington, (2002), "Entrepreneurial Activity and Economic Growth: An Empirical Analysis", Paper prepared for the Kaufman Foundation.

Acs, Zoltan J (2006), "How is Entrepreneurship Good for Economic Growth?" *Innovations, Winter, pp. 97-107*

Acs Zoltan, S. Desai and L. Klapper (2008), "What Does Entrepreneurship Data Really Show?" *Small Business Economics*, **31** (3), pp. 265-81

Action plan to promote entrepreneurship and competitiveness, Luxembourg: Office for Official Publications of the European Communities, 1999

Ahmad N. and R. G Seymour (2008), "A Framework for Addressing and Measuring Entrepreneurship", OECD Statistics Directorate Working Paper, STD/DOC (2008) 2

Ahmad, N and R. G Seymour (2008*),* "Defining Entrepreneurial Activity: Definitions Supporting Frameworks for Data Collection". OECD Statistics Working Paper, January, Paris

Aloysius Ajab Amin (2002), "An examination of the sources of economic growth in Cameroon". AERC Growth Project

Armington C and Acs Zoltan J (2002), "The determinant of regional variation in new firm formation", *Regional Studies* **36** (1), pp. 33-45

Audretsch, D.B. and A.R. Thurik (2001b), "Linking entrepreneurship to growth", STI working paper 2001/2, Paris: OECD.

Audretsch David, Martin Carree, Adrian van Stel, and Roy Thurik (2002), "Impeded Industrial Restructuring: The Growth Penalty", *Kyklos* **55(**1), pp.81-98

Audretsch, D.B. and M. Keilbach (2002), "Entrepreneurship capital and economic performance", Centre for Economic Policy Research Discussion Paper DP3678, London: CEPR.

Audretsch, D.B., A.R. Thurik, I. Verheul and A.R.M. Wennekers (eds.) (2002), "Entrepreneurship: Determinants and Policy in a European - US Comparison", Boston/Dordrecht: KluwerAcademic Publishers.

Audretsch, David B. and Michael Fritsch (2002), "Growth Regimes over Time and Space", *Regional Studies*, **36**(2), pp. 113-124.

Blanchflower, D.G. (2000), "Self-employment in OECD countries", *Labour Economics* **7**, pp. 471-505.

Blanchflower David and Andrew Oswald (2001), "Measuring Latent Entrepreneurship Across Nations". In

A Jolly (ed.), The European Business Handbook (Kogan) pp. 6-8

Bosma, N. and H. Nieuwenhuijsen (2000), "Turbulence and productivity in the Netherlands", EIM research report 9909/E, EIM Small Business Research and Consultancy, Zoetermeer, the Netherlands.

Callejon Maria and Agusti Segarra (1999), "Business Dynamics and Efficiency in Industries and Regions: The Case of Spain", *Small Business Economics*, **13**(4), pp. 253-271.

Caree Martin, Andre Van Stel, Roy Thurik and Sander Wennekers (2002*),* "Economic development and Business Ownership: An Analysis Using Data of 23 OECD Countries in the period 1976-1996". *Small Business Economics* **19**(3), pp. 271-290

Caree Martin, A. and Roy Thurik (2002), "The Impact of Entrepreneurship on Economic Growth" in David B. Audretsch and Zoltan J. Acs (eds), *Handbook of Entrepreneurship Research*, Boston/Dordrecht: Kluwer-Academic Publishers

Caves, R.E. (1998*),* "Industrial organization and new findings on the turnover and mobility of firms", *Journal of Economic Literature* **36**(4), pp. 1947-1982.

Dejardin, Marcus (2000), "Entrepreneurship and Economic Growth: An Obvious Conjunction?" Namur, Belgium: University of Namur.

Desai, Sameeksha (2009), "Measuring Entrepreneurship in Developing Countries",Research Paper No. 2009/10, United Nations University–World Institute for Development Economics Research, March, pp.1-12.

Estrin, Saul; Klaus E. Meyer, and Maria Bytchkova (2006), "Entrepreneurship in Transition Economies", Chapter 27 in Mark Casson, Bernard Young, Anuradha Basu, and Nigel Wadeson (eds) *The Oxford Handbook of Entrepreneurship*, Oxford: Oxford University Press, pp. 693-725.

Foelster, S. (2000), "Do entrepreneurs create jobs?" *Small Business Economics* **14** pp. 137-148.

Gaglio, C.M. and Katz, J.A. (2001), "The Psychological Basis of Opportunity Identification: Entrepreneurial Alertness", *Small Business Economics* **16** pp. 95-111.

Geroski Paul (1989), "What do we know about entry?" *International Journal of Industrial Organization*

Geroski, P.A. (1989), "Entry, innovation, and productivity growth", *Review of Economics and Statistics* **71** pp. 572-578.

Glaeser, E.L., H.D. Kallal, J.A. Scheinkman and A. Shleifer (1992), "Growth in Cities, *Journal of Political Economy* **100** pp. 1126-1152

GEM (2000), "Global Entrepreneurship Monitor, Global 2000 Executive Report", www.gemconsortium.org.

Gujarati, D (2003), *Basic Econometrics*, Mc Graw Hill, New York.

Hart, Mark and Eric Hanvey (1995), "Job Generation and New and Small Firms: Some evidence from the late 1980s". *Small Business Economics* **7** pp**.** 97-109

Henderson Jason (2006), "Understanding rural entrepreneurs at the county level: data challenges". Presented at the Frameworks for Entrepreneurship Research in Food, Agricultural and Rural Development Workshop. *Federal Reserve Bank of Kansas City*.

Johnson S., Acemoglu, D., and J. Robinson (2000), "The Colonial Origins of Comparative Development: An Empirical Investigation". Working Paper No. 7771, NBER, Cambridge, Masachusetts.

Keith Godin, Jason Clemens, and Niels Vedhius (2008), "Measuring Entrepreneurship. Conceptual Frameworks and Empirical Indicators". Fraser Institute, Canada

Lever, M.H.C. and H.R. Nieuwenhuijsen (1999), "The impact of competition on productivity in Dutch manufacturing", in: D.B. Audretsch and A.R. Thurik (eds.), *Innovation, Industry Evolutionand Employment*, Cambridge: Cambridge University Press, pp. 111-128.

Lingelbach, David; Lynda de la Viña and Paul Asel (2005), *What Is Distinctive About Growth-Oriented Entrepreneurship in Developing Countries?*

Licht, A. N. (2007), "The entrepreneurial spirit and what the law can do about it". *Comparative Labor Law & Policy Journal*, **28**(4), 817-862.

McMillan, John and Christopher Woodruff (2002), "The Central Role of Entrepreneurs in Transition Economies", *Journal of Economic Perspectives*, **16(**3) pp.153-170.

Murphy, K. M., A Shleifer, and R.W Vishny (1991), "The Allocation of Talent: Implications for Growth". *Quarterly Journal of Economics*, **106**(2): 502-30

Nickell, S., P. Nicolitsas and N. Dryden (1997), "What makes firms perform well? *European Economic Review* **41**, pp.783-796.

Nickell, S.J. (1996), Competition and corporate performance, *Journal of Political Economy* **104**, pp. 724-746.

Prusa, T.J. and J.A. Schmitz Jr. (1991), "Are new firms an important source of innovation? Evidence from the software industry", *Economics Letters* **35**, pp. 339-342.

Reynolds, P.D. (1999), "Creative destruction: source or symptom of economic growth?", in Acs, Z.J., Carlsson, B. and Karlsson, Ch. (eds.), *Entrepreneurship, Small and Medium-Sized Enterprises and the Macroeconomy*, Cambridge: Cambridge University Press, pp. 97-136.

Rothwell, R. (1983), "Innovation and firm size: A case for dynamic complementarity; Or, is small really so beautiful?", *Journal of General Management* **8**, pp.5-25.

Schumpeter Joseph .A (1934), *The Theory of Economic Development*, Cambridge, MA

Shane, S (2003), *A General Theory of Entrepreneurship: The Individual-Opportunity Nexus*. Cheltenham, UK: Edward Elgar.

Solow Robert (1970), "Technical Change and the Aggregate Production Function. *Review of Economics and Statistics* **39**, pp. 312-320

Van Stel, A. J. and D. J Storey (2004), "The Link between Firm Births and Job Creation: Is there a Upas Tree Effect?" *Regional Studies* **38**, pp. 893-909

Van Stel (2004), "Exploiting Entrepreneurial Opportunities: The Impact of Entrepreneurship on Growth, Germany" *Small Business Economics*

Van Stel, A. J. and D.J Storey, and A. R. Thurik (2004), "The Effect of entrepreneurship on National Economic Growth*:* An Analysis using the GEM Database", *Small Business Economics*

Van Praag, C Mirjam and Peter H. Versloot (2007), "What is the Value of Entrepreneurship? A review of Recent Research". IZA DP No. 3014. Institute for the Study of Labour

Wennekers, A.R.M. and A.R. Thurik (1999), "Linking entrepreneurship and economic growth, *Small Business Economics* **13**, pp. 27-55.

Wennekers, S., Van Stel, A., Thurik, R. and Reynolds, P. (2005*), "* Nascent Entrepreneurship and the Level of Economic Development", *Small Business Economics*, **24,** pp. 293-309.

Wennekers, A.R.M., A.R. Thurik and L. Uhlaner (2002*), "*Conditions, entrepreneurship and economic performance: the macro view", *International Journal for Entrepreneurship Education* 1

World Bank Group (2009), *Entrepreneurship Database*
http://www.gcgf.org/ifcext/sme.nsf/Content/Entrepreneurship+Database>

Wong, Po Kam, Yuen Ping Ho and Erkko Autio (2005), "Entrepreneurship, innovation and economic growth: evidence from GEM data", *Small Business Economics* **24** (3), pp. 335-350.

APPENDIX A: Integration and Correlation Results

	Variable/Order of Integration	I(0)	I(1)	I(2)	I(3)
1.	Real Gross Domestic Product			√	
2.	Capital			√	
3.	Labour			√	
4.	Entrepreneurship		√		
5	New		√		

Table 1: Order of Integration for the variables included in the research model

Source: WBGES Data (2009)

	RGDP	ENTER	NEW	CAPITAL	LABOUR
RGDP	1.0000000	0.9810617	0.9453638	0.98992566	0.91022940
ENTER	0.9810617	1.00000000	0.94764818	0.99048376	0.98526663
NEW	0.9453638	0.97981986	1.00000000	0.978894353	0.97066801
CAPITAL	0.9899257	0.95861488	0.94828037	1.000000000	0.80384630
LABOUR	0.8319365	0.91022940	0.88560680	0.996011801	1.00000000

Table 2: Correlation matrix for the variables included in the regression model

Source: WBGES Data (2009)

APPENDIX B: Scatter Diagrams

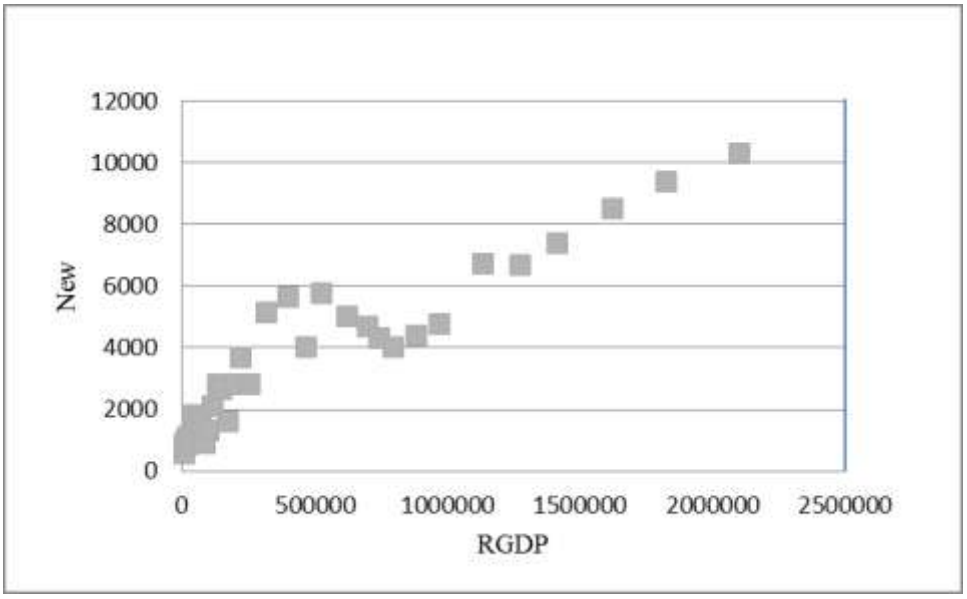


Figure 1: Correlation between New and RGDP

Source-WBGES Data (2009)

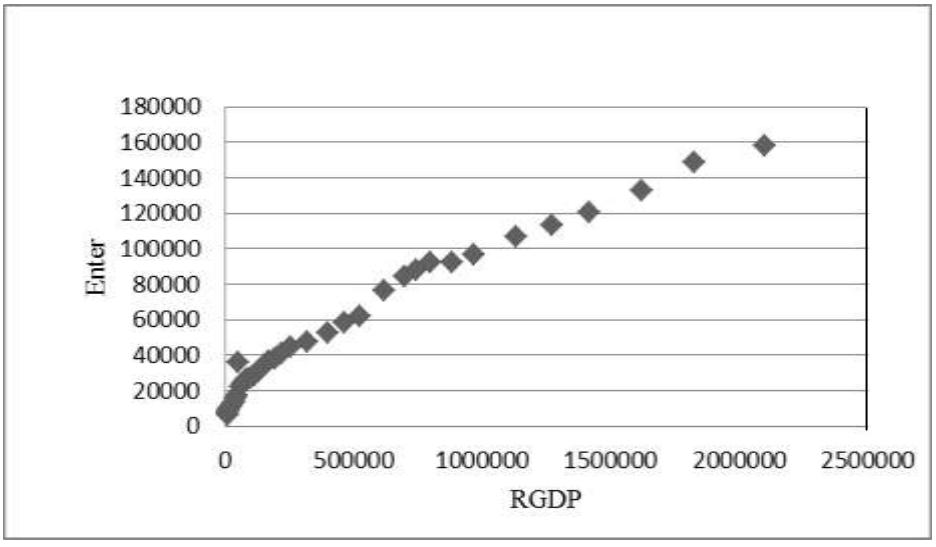


Figure 2: **Correlation between Enter and RGDP**

Source-WBGES Data (2009)

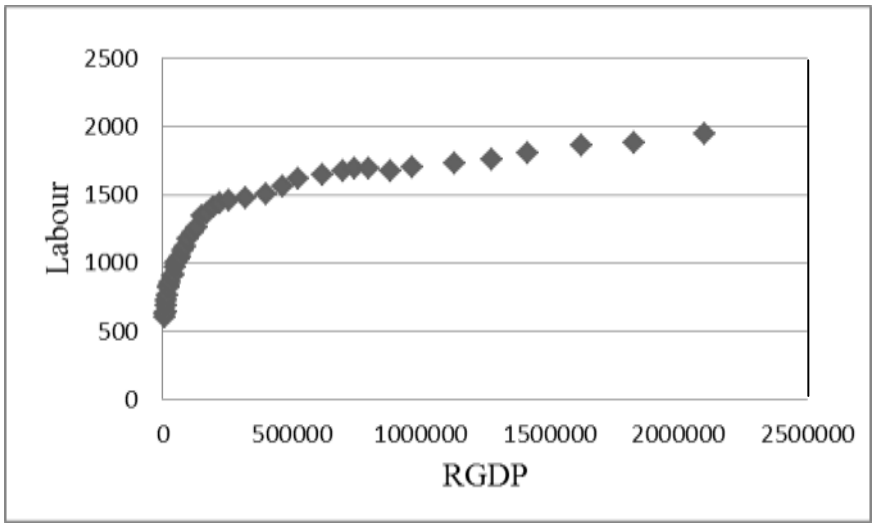


Figure 3: Correlation between Labour and RGDP

Source-WBGES Data (2009)

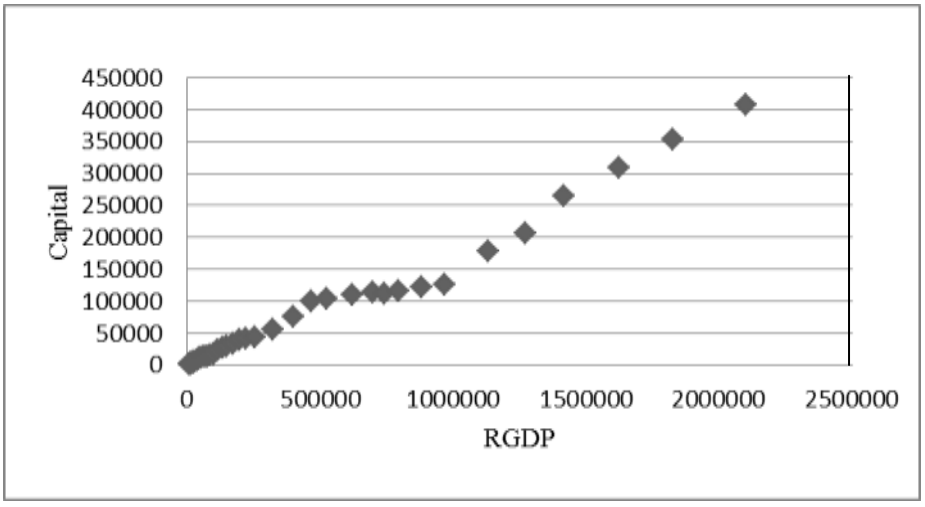


Figure 4: Correlation between Capital and RGDP

Source-WBGES Data (2009)

Appendix C: Extract from the Sample Data for the Kenyan Economy

Year	Real GDP Kshs millions	Capital Kshs millions	Labour 000's	Total Businesses at year-end	New Businesses in the current year
1968	9594	1790	606	6342	562
1969	10406	1874	627	6987	799
1970	11506	2254	645	7787	854
1971	12860	2884	691	8718	985
1972	15052	3276	720	9277	857
1973	17566	3592	761	9794	868
1974	21214	4056	826	10664	1,021
1975	23938	4838	819	11443	1,090
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2008	2099798	408327	1943	158317	10293

Source: WBGES (2009), Kenya Statistical Abstracts and Economic Surveys